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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,650	11/28/2001	Julia C. Duncan	DUNCAN 3-10-40	7404

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EXAMINER
HOGANS, DAVID L

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,650	DUNCAN ET AL.	
	Examiner	Art Unit	
	David L. Hogans	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *1-8 and 18-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 9, 11, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by 6,380,040 to Kepler et al.

In reference to Claim 9, Kepler et al. teaches:

- forming an indium doped dielectric (370 and 371) over a semiconductor substrate (300) (See column 5 lines 30-63)

In reference to Claim 11, Kepler et al. teaches:

- forming an indium doped silicon dioxide layer (See column 5 lines 30-63)

In reference to Claim 14, Kepler et al. teaches:

- forming an active region over the substrate wherein the indium doped dielectric is formed over the active region (See column 5 lines 30-63 and Figures 3E-3H)

In reference to Claim 15, Kepler et al. teaches:

- forming an indium doped dielectric layer via a chemical vapor deposition (See column 5 lines 34-37)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over 6,380,040 to Kepler et al. in view of 6,051,884 to Papadas.

Kepler et al. teaches a indium doped dielectric layer formed over a semiconducting substrate.

Kepler et al. fails to explicitly teach the indium doped dielectric layer used as an interlevel dielectric.

However, Papadas, in column 4 lines 1-6, teaches a indium doped oxide used as a interlevel dielectric (80). Furthermore, Papadas teaches that indium doped oxide is an insulator. (See column 3 lines 25-30)

It would have been obvious to one of ordinary skill in the art to modify Kepler et al. in view of Papadas' teachings of a indium doped oxide used as a interlevel dielectric. Kepler's et al. modification via Papadas' teachings is obvious because indium doped oxide may act as an insulator.

5. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over 6,380,040 to Kepler et al. in view of 6,195,191 to Osenbach et al.

Claim 12

Kepler et al. teaches a indium doped dielectric layer formed over a semiconducting substrate.

Kepler et al. fails to explicitly teach a 400-1200 nm indium doped dielectric layer.

However, Osenbach et al., in column 5 lines 30-40, teaches an indium doped oxide layer having a thickness of at least 300 nm. Further, Osenbach teaches the thicker the buffer layer, generally the higher the voltage required to operate the device.

It would have been obvious to one of ordinary skill in the art to modify Kepler et al. in view of Osenbach's teachings of a indium doped oxide having a thickness of at least 300 nm. Kepler's et al. modification via Osenbach's teachings is obvious because

the voltage required to operate the device can be manipulated by the indium doped oxide layers thickness.

Claim 13

Kepler et al. teaches a indium doped dielectric layer formed over a semiconducting substrate.

Kepler et al. fails to explicitly teach a indium doped dielectric layer with a 1 to 15 mole weight percent of indium concentration.

However, Osenbach et al., in column 5 lines 20-27, teaches an indium doped oxide layer with a 5 mole percent concentration of indium oxide. Further, Osenbach teaches that one would use this dielectric film to prevent light propogating through the waveguide from being absorbed by the electrodes.

It would have been obvious to one of ordinary skill in the art to modify Kepler et al. in view of Osenbach's teachings of an indium doped oxide layer with a 5 mole percent concentration of indium oxide. Kepler's et al. modification via Osenbach's teachings is obvious because dielectric films can be used to prevent light propogating through the waveguide from being absorbed by the electrodes.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over 6,380,040 to Kepler et al. in view of Publication No. JP2001-195789.

Kepler et al. teaches a indium doped dielectric layer formed over a semiconducting substrate.

Kepler et al. fails to explicitly teach a indium doped dielectric layer using a PVD process employing a target that comprises silicon dioxide and indium.

However, JP2001-195789, in column 2 lines 10-20, teaches forming an indium doped oxide layer via a PVD process with a target comprised by silicon dioxide, indium and chalcogen treated zinc. Further, JP2001-195789 teaches that the silicon dioxide indium doped protective film is formed without cracks, thereby increasing production efficiency.

It would have been obvious to one of ordinary skill in the art to modify Kepler et al. in view of JP2001-195789 teachings of forming an indium doped oxide layer via a PVD process with a target comprised by silicon dioxide, indium and chalcogen treated zinc. Kepler's et al. modification via JP2001-195789 teachings is obvious because the silicon dioxide indium doped protective film is formed without cracks, thereby increasing production efficiency.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over 6,380,040 to Kepler et al. in view of 5,397,920 to Tran.

Kepler et al. teaches a indium doped dielectric layer formed over a semiconducting substrate.

Kepler et al. fails to explicitly teach a pressure ranging from 4 to 8 mtorr, a radio frequency ranging from 50 to 550 watts and a gas flow rate ranging from 10 to 35 sccm.

However, Tran, in column 6 lines 34-49 and column 7 lines 29-32 and lines 51-57, teaches forming an indium doped oxide layer via a pressure of 7 mtorr, a radio frequency of 300 watts and a gas flow rate of 30 sccm. Further, Tran teaches that these process limitations give a film deposition rate of 1 angstrom per second. (See column 7 lines 53-57) Furthermore, Tran's use of such processing conditions shows the formation of an oxide layer to be functional.

It would have been obvious to one of ordinary skill in the art to modify Kepler et al. in view of Tran's teachings of forming an indium doped oxide layer via a pressure of 7 mtorr, a radio frequency of 300 watts and a gas flow rate of 30 sccm. Kepler's et al. modification via Tran's teachings is obvious because the above process limitations give a film deposition rate of 1 angstrom per second.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Hogans whose telephone number is (703) 305-3361. The examiner can normally be reached on M-F (7:30-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

C. Chaudhari

Chandra Chaudhari
Primary Patent Examiner

dh DH
August 19, 2002